**Raising Math Scores**

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Hopkins Elementary School

**Problem Summary**

Over the past couple of years the math scores on state standardized tests in 4th and 5th grade has decreased. Hopkins is having difficulties with the amount of students who did not qualify in the meet category on the math criterion reference standardized test. In the 2010 – 2011 school years, 25.1 percent of 5th grade students did not meet in the math portion of the standardized test. 25.7 percent of 4th graders did not meet in the math section of the state standardized test. The goal is for the average math score to be 80 percent. The math gap is 5.1 for the 5th grade students. The 4th grade gap is 5.7 percent.

**Background of Organization**

Hopkins Elementary School is located in Lilburn, Georgia. Lilburn is located in an inner city area in which many of the parents are receiving public assistance. 95 percent of students receive free or reduced breakfast and lunch. The school was built to relieve the over crowdedness of nearby schools. The school mascot is the mustang. Blue and white are the school colors. Over 26 languages are currently spoken at Hopkins. This makes Hopkins a diverse school with a rich culture. The children are the clientele and main focus of this organization. The accountability report, criterion reference competency testing scores, academic basic skills assessment, county test scores, and the curriculum taught will be useful information when planning an appropriate intervention. Additional public relation information can be found on the Georgia Department of Education website under the heading data reporting. The user will find the academic performance of students’ scores on the standardized test based on subgroups. More information can be found about the school at http://www.gwinnett.k12.ga.us/HopkinsES/home.html. (Gwinnett County Public School, 2009)

**Stakeholders and Decision-Makers**

The stakeholders and decision makers will be the principal Penny Clavijo, the math coach, Ms. Kirkwood, and the following math teachers, Lauren Dart, Karen Marks, Stephanie Bischoff, and Sarah Bullard. The data administrator, Cynthia Tookes, and the math coach Ms. Kirkwood will be interviewed.

The data administrator, principal, math coach, and the fourth and fifth grade math teachers will give insight into the performance problem. After all information is analyzed, the findings will be shared with the principal. She will have the final say in which intervention or interventions she will use. (See Appendix A for Interview)

**Performance Gap Cause Analysis**

Students at Hopkins Elementary School have a math achievement gap in terms of where they are currently performing in math and where they need to be. The 4th grade students are currently seeing a gap of 5.7 percent. The fifth grade students are at a gap of 5.1 percent. The special education and Hispanic students are the lower achieving subgroups that have caused this performance gap.

**Actual Current Performance**

Hopkins Elementary School 4th grade students are currently achieving 74.3 percent on the math portion of the standardized test. The 5th grade students are achieving 74.9 percent on the math section of the standardized test.

**Desired Performance**

The focus of this performance improvement intervention project will be to increase the math performance on standardized test. The target goal will be 80 percent. The organization will increase parent involvement and support teachers in learning a variety of ways to teach math. The school would like to see this rate increase each year by 5 percent.

**Cause Analysis**

Many factors have influenced the decline in math scores. The math coach as well as the data administrator had a few explanations on why the performance gap exists. The data administrator believes the gap at Hopkins Elementary school is due to not having common core math standards. Hopkins has many transient students who enroll throughout the course of a school year. This makes teaching difficult. The math coach blames the gap on poverty. Hopkins is located in a poor inner city area that is becoming more impoverished due to the economy. Parents’ main focus is finding jobs and not focusing on students’ education. The math coach also believes math scores have decreased due to the amount of educational programs that have been cut at Hopkins. This would include morning academy. This is where students would come in before school for extra help in math. Mustang time, another math support program that was cut due to lack of funding, this program helped students in 4th and 5th grade with basic math facts and math problem solving equations.

**Organizational History and Background**

**Goals:** Hopkins Elementary School will increase academic performance in mathematics for 4th and 5th grade students, including students in targeted subgroups, to meet or exceed annual targets through staff development instruction, collaborative planning with math coaches for targeted interventions, implementation of instructional calendar, technology integration, use of quality plus instructional strategies, and peer coaching.

Objectives. (2010). Hopkins Elementary School. Retrieved July 19, 2011, from http://www.gwinnett.k12.ga.us/HopkinsES/Mission\_Statement/HES\_Mission\_Beliefs.htm.

**History**: In 1985, Hopkins Elementary School was dedicated to George Harrison Hopkins, because he was the first school master in Pinckneyville militia district. He also served as a tax collector and a representative to the state legislative. The school was funded by a 1982 bond issue.Hopkins started out as a school built to relieve over crowdedness. Over the years, Hopkins began to grow in size making it the 2nd largest elementary school in the United States. Hopkins has close to 1,800 students that are currently enrolled. In 2003, Hopkins had a complete renovation adding a larger cafeteria, media center and office area. A third story was added creating 43 additional classrooms. Hopkins has a rich history of diversity that is celebrated through cultural events each year at the school. Tradition is what keeps Hopkins growing as a whole.

**Mission and Vision**

The school’s vision is to collaboratively work together to increase student achievement.

Hopkins Elementary school core values are the following:

1. Accept and celebrate diversity.

2. Pursue excellence in AKS by setting high academic goals.

3. Set expectations for each student.

4. Administer accurate and meaningful assessments and utilize the results.

5. Provide continuous training and development of school personnel to become lifelong learners.

6. Establish community partnerships.

7. Increase the parent involvement program.

8. Provide a safe, secure, and organized learning environment.

Hopkins also has administrative core beliefs. Which are the following:

1. All children can learn.
2. Professional learning creates a community of effective educators.
3. Professional appearance promotes respect from others.
4. Everyone is a team player.
5. Maximizing instructional time daily.
6. Utilizing common planning time to create professional learning communities.
7. In making data driven decisions that promote and support student achievement.
8. In utilizing the GCPS Quality Instructional Strategies.

(Mission statement and core beliefs. (2010). Hopkins Elementary School. Retrieved July 19, 2011, from http://www.gwinnett.k12.ga.us/HopkinsES/Mission\_Statement/HES\_Mission\_Beliefs.htm.

**Three Intervention Strategies**

**Low Intervention Strategy**

The stakeholders and decision makers will be presented with a low end intervention strategy. This will include a monthly newsletter sent out to parents about the math skills that are being taught each month. Teachers will attend a county math seminar for one week out of each year. Math coaches will discuss what math exemplars teachers will teach students each week. Teachers will also take part in a book study. Teachers will read *What Great Teachers Do Differently by* Todd Whitaker*.* This book highlights what great teachers should do in the classroom especially how teachers approach standardized testing. Teachers will join the National Council of Teachers of Mathematics or a similar national math organization to keep current on math ideas.

**Middle Intervention Strategy**

The next strategy will be the middle intervention. A after school math program will be implemented. This program will target 4th and 5th grade students who are struggling in math based on previous math standardized test scores and current classroom math grades. Parents and other local volunteers will assist the math teacher in the classroom during math instruction to give extra assistance to students. Monthly conferences will be held between parent, teacher, math coach, and student to see what math skills the student is struggling with and how to solve the issue. The use of technology will be implemented into the curriculum with the use of Success Maker and Education City.

**High Intervention Strategy**

Lastly, the high end intervention and rather costly plan would include the school hiring teachers who have elementary or middle school math education degrees. The school will choose teachers who have one of these degrees as well as over 5 years of teaching experience in math. The goal is to give bonuses to teachers who retain these qualities and recruit them to Hopkins Elementary School.

**Rationale and Justification**

The low intervention plan was not chosen because it didn’t go far enough when it comes to closing the performance math gap especially targeting the low subgroups of special education. Teachers sending home newsletters and being part of a book study that highlights what great teachers should do in the classroom especially how teachers approach standardized testing does not go far enough in helping students learn math skills. Another part of this intervention included teachers joining the National Council of Teachers of Mathematics or a similar national math organization to keep current on math ideas. Joining this organization will give teachers an overview of how to better teach math skills but does not go in debt, and does not offer communication between the teacher and organization when trying to get answers to problems that arise when teaching math.

The high intervention was not chosen. This intervention would include the school hiring teachers who have elementary or middle school math education degree or degrees. The school would choose teachers who had this degree as well as teachers who had 5 years of teaching experience in math. The goal is to give bonuses to teachers who retain these qualities and recruit them to Hopkins Elementary School. This plan would help close the performance gap of low math scores, because highly skilled teachers would know how to differentiate instruction between the different subgroups of student learners. This plan is too costly and will take too long to implement. Changes in math scores need to happen quickly. The strengths behind this plan was that all teachers teaching math would have a solid foundation on math skills and have experience teaching math in a variety of forms.

The middle intervention strategy was chosen out of the three mentioned. This would include offering an after school math program for 4th and 5th grade students who have poor math class grades and failed previous math standardized tests. Extra tutoring will help to decrease the math performance gap in all subgroups. This is the goal of the organization. Teachers will use hands on material when teaching. This will include base ten blocks, place value mats, multiplication and division flash cards, playing cards for place value games, and a variety of other math material. A variety of math websites will also be used. Math software programs such as Education City, Success Maker, and Study Island that target math skills will be the technology portion of this intervention. According to a math study at Reynoldsburg Junior High School, students started with a mean average of 4.4. After 25.1 hours spent on SucessMaker, over the course of a school year, the class average was 5.2. This is equal to an 8 month gain. According to the math coach, “Students learn better when there is a low teacher to student ratio when learning” (Kirkwood, Christen. Personal interview. 23 July 2011). Parents and other local volunteers will assist math teachers in the classroom during math instruction to give extra assistance to students. Monthly conferences will be held between parent, teacher, math coach, and student to see what math skills the student is struggling with and how to solve the issue. This intervention was chosen because it is less expensive than the high intervention. The only limitation is finding enough volunteers to help in the classrooms.

The low math scores are a result of students having difficulty with understanding math vocabulary terms because of language barriers. Hopkins is a low economic minority school. Parents’ main priority is to provide food, shelter, and clothing for their families. The lack of family involvement in students’ education is shown with little to no attendance at PTA functions, parent conferences, or math curriculum nights. More reasons that the math gap exist, is that Hopkins Elementary School lacks the funding to implement math programs and technology that other schools have that are in the same county. This includes math programs such as Study Island and learning today. The lack of computers in the classroom as well as no Smart Boards, compared to other schools that have several computers in a classroom and a Smart Board limits the use of technology. Students are being taught what is on a test rather than teaching math skills that relate to real world issues. The lack of student attendance is a problem. The amount of tardiness and student absences is atrocious. When a student is missing instruction it makes it difficult to learn. The last reason why the performance gap exists is that many of the students at Hopkins move from Hopkins to another school within the same year. With that being said, Hopkins also receives new students throughout the entire year on a weekly basis. Families move constantly in the school district and out because of lack of jobs and citizenship issues. (Additional research on SuccessMaker and Study Island can be found under Appendix B)

**The Managers Many Roles**

The project manager will take a leadership role. He or she will create an “Environment where people can succeed and where workplace performance will improve” (Chevalier, 2007, p.24). The project manager will make sure seasoned math teachers are chosen for the after school math program. This will include teachers who have taught over 5 years and have high standardized test scores in math. The project manager will be responsible for recruiting volunteers to assist in the classroom. The project manager will seek out parents that have a least a bachelor degree to assist in the classroom. The project manager will make sure teachers are holding monthly conferences with parents of students who are struggling in math based off of classroom grades. The manager will also provide support to teachers making sure materials and equipment are available.

**Manager’s Role of Tracking Data**

The project manager is responsible for gathering data and tracking progress. At the beginning of the after school math program students will take a math test that is similar to a standardized test. During the middle and end of the math program students will take another math test. The students’ scores will be charted to see how much progress is made and in what areas. The project manager will see if any changes to the program should be made based on the assessments. Math educational software will be used to target certain math skills that students need additional help with. The feedback will be relayed to the teachers and math coach. The teachers and math coach will then spend extra time on targeting math skills students struggle with.

**The Manager as Change Agent: Financial**

Implementing interventions can be costly. The after school program will cost the school $32.00 an hour for each teacher. This is the cost the school pays for the after school science program. The cost will be $11,520 for after school tutoring for2 hours twice a week for 5 teachers for 18 weeks. The parent center located inside of the school will send out parent recruitment letters to encourage parents to volunteer in the classrooms. Sending out letters on a monthly basis to keep volunteers in the classroom will cost 2 cents a copy. The parent center will send out 100 recruitment copies each month to random households and to parents who currently volunteer or have volunteered in the past. The total cost of sending out recruitment letters will be $18.00 to increase math scores the school will need to purchase yearly subscriptions to SucessMaker, Education City, and Study Island. Hands on material will need to be purchased such as base ten blocks, place value mats, multiplication and division flashcards for each student. SucessMaker will be $330 a year. Study Island will cost $766 a year. Education City will cost $469 per year. All educational programs will be purchased on a yearly basis and renewed if math scores increase. Math manipulative kits cost $2,249.95 per classroom. Each classroom will need 1 kit. There are 10 fourth and fifth grade classrooms at Hopkins Elementary School. The total cost for math kits will be $22,499.50. The total financial cost for increasing math scores will be $35,602.50 (See Appendix C for SucessMaker, Study Island, Education City, and math kit documentation on prices) (See Appendix D for budget spreadsheet)

**Technical Information**

The school will use three educational software programs such as Education city, SuccessMaker, and Study Island. The students will use each program for 30 minutes twice a week. The teacher will chart student progress each week. Information will be stored in a binder to make it easily assessable. The education software gives feedback on what math strands students are struggling with. The teachers, math coaches, and project manager will look at results each month making sure students are progressing. Feedback from teachers on what strands should receive additional coverage in the classroom will be discussed. Teachers are expected to give feedback on the positives and negatives of the program to the project manager.

**Project Assessment/Evaluation**

There will be a math assessment that takes place every month that is similar in questions to the state standardized test. The assessment will be 10 questions. The assessment will have different questions every month. The final assessment will be the actual state standardized test to see if students’ math scores increase. Each teacher will fill out an open ended survey of 3 questions each month to see what parts of the intervention is working and what is not. The teachers, math coach, and project manager will meet monthly to review students data, that charts student’s progress on educational programs, classroom grades, and monthly assessments to see what math skills need extra support and should be taught in the after school math program.

The project manager will further evaluate his or her project by answering the following questions that can be found in Appendix E.

This is the performance improvement intervention project that was created to help increase the math scores at Hopkins Elementary School. With hard work from parents, teachers, students, and all other support staff these interventions will show a steady rise in math scores over the next two years.

(See Appendix F for survey)(See Appendix G for a sample of the summative assessment)

**Executive Summary**

Hopkins math scores on the state standardized tests are currently at 74.3 percent. This score is decreasing each year. The goal is to achieve 80 percent on the math section of the state standardized test. There are a number of changes that need to take place in order to improve math test scores. When it comes to students’ success it is a process that involves parents, students, and school staff. The plan of combining parent involvement, educational based computer programs such as Education City, SuccessMaker, and Study Island in combination of using hands on manipulatives in the classroom will only help increase student performance.

Hopkins Elementary School will create an after school math program for students who failed the math standardized test in previous years and students who have low classroom grades in math. The program will start in January and run until May. The classes will be held twice a week on Tuesday and Thursday. There will be no more than 12 students in a class to maximize learning. The total cost of purchasing manipulatives, educational software and implementing an after school program will cost $35,602.50 for the year. The progress of the above interventions will be monitored. Teachers will chart each student’s performance of the education programs on a weekly basis. The monthly tests will also be graphed. The results will be discussed between the project manager, teacher, and math coach to see what if anything needs to be tweaked. The results from the educational programs and monthly tests will help teachers recognize what math strands students need extra help in.

**Appendix A**

**Interview Questions and Answers**

**1. What do you think are effective ways to support math teachers in improving their**

**classroom practice?**

Ms. Kirkwood replied: I believe using hands on materials and well as educational software will increase student learning.

**2. What are some major challenges that you have experienced in supporting teachers’**

**learning?**

Ms. Kirkwood replied: The major challenge comes from teachers being unwilling to accept change and change to their teaching style.

**3. What are the weakest math strands students need to work on?**

Ms. Kirkwood replied: Numbers and operations is the weakest math strand.

**4. Are the math scores at Hopkins Elementary School comparable at neighboring schools?**

Mrs. Tookes replied: No, Hopkins math scores are lower than neighboring schools.

**5. What kinds of problems or mathematical tasks would you expect to see the**

**students working on for instruction to be of high quality?**

Ms. Kirkwood: I would like for students to be in small groups working together on tasks as the teacher rotates around to the different groups making sure students are on task and providing math support.

**6. Do you think technology plays a role in improving technology? If so, what types of software or tools would you like to see used in the classroom?**

Ms. Kirkwood replied: Education city is great software that is shown to improve math scores on state standardized tests.

**7. What would a math instruction block look like to achieve maximum math instruction?**

Ms. Kirkwood replied: A successful math block would include a 15 minute mini lesson, 30 minute hands on activity, 10 minutes of sharing, 5 minute assessment. The assessment can be orally or written and can be as little as 1 question.

**8. What would you do to improve parent support when it comes to helping their children succeed in math?**

Mrs. Tookes replied: Parents support can be improved through PTA and having math nights at the school to increase students’ math needs and making parents aware of the curriculum will increase support.

**9. What type of training would you like to see all math teachers be a part of?**

Ms. Kirkwood replied: All teachers should attend the math training that is held by the instructional support center that is part of the Gwinnett Public School System.

**10. Please tell me what additional ideas that I have not touched on that you would do to support students, teachers, and parents in terms of improving math scores.**

Mrs. Tookes replied: I would like to see additional computers and math support staff would help to increase math scores.

**Appendix B**

**Research that supports the intervention chosen**

1. Research that supports Study Island

http://www.studyisland.com/salessheets/Case%20Study%20Summary%20State%20of%20Michigan.pdf

2. Research that supports SuccessMaker

<http://www.otterbein.edu/education/JTIR/volumeI/woodfinal.pdf>

**Appendix C**

**Websites that document the cost of education software**

1. SucessMaker Website documentation of cost.

<http://www.pearsonschool.com/index.cfm?locator=PSZkBz>

1. Study Island website documentation of cost.

<http://studyisland.com/PriceList.cfm?mystate=US#pl_elem>

1. Education City website documentation of cost.

<http://us.educationcity.com/us/teacher/pricing>

1. Math Manipulative documentation of cost.

<http://www.delta-education.com/productdetail.aspx?Collection=Y&prodID=2010&menuID=84&topID=&subID=27&ReturnColl=Y&page=manipulatives>

**Appendix D**

**Budget Spreadsheet**

After school tutoring $32.00 X 2 hours X twice a week x five teachers x 18 weeks = $11,520

Newsletters $0.02 x 100 copies x 8 months = $18.00

Successmaker yearly subscription = $330.00

Study Island yearly subscription = $766.00

Education City yearly subscription= $469.00

1 Math Manipulative kits $2249.95 x 20 classrooms = $22499.50

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**Total Budget cost $35,602.50**

**Appendix E**

**Project Manager Assessment Feedback Tool**

1. Did your assessment allow students to use higher-level thinking and problem-solving skills?

2. Did your assessment allow students to achieve one criteria while advancing to another?

3. Did you create a rubric to evaluate the students' progress throughout the task?

4. Are the implementations showing results?

**Appendix F**

**Teacher Survey**

1. What progress if any do you see with student performance with the new math interventions in place?

2. What needs to be tweaked about the new interventions?

3. What help can the project manager offer you to help the teacher succeed with student success?

**Appendix G**

**Monthly Assessment**

1. Find the difference.

A. 488

B. 498

C. 518

D. 598

2. Which number is a multiple of 7?

A. 12

B. 16

C. 20

D. 28

3. Which number sentence is true?

A. 7 × 6 = 6 × 7

B. 7(6 + 7) = 6 × 7

C. 7 – 6 = 6 – 7

D. 7(6 + 7) = 42

4. If it takes Mari 20 minutes to walk from home to school, what is the latest time she can leave to get to school by 8:10 A.M.?

A. 7:00 A.M.

B. 7:10 A.M.

C. 7:50 A.M.

D. 8:00 A.M.

5. Keiko wants to measure the distance from his house to school. It takes him fifteen minutes to get to school by car.

Which unit would be BEST for measuring the distance from Keiko's house to school?

A. centimeter

B. meter

C. kilometer

D. millimeter

6. Which is eight hundred sixty-five thousand, nine hundred thirty-two?

A. 865,900,32

B. 865,293

C. 865,932

D. 856,392

7. Which of these shows 87 rounded to the nearest ten?

A. 80

B. 85

C. 90

D. 97

8. Look at the pattern of numbers.

3, 6, 9, 12

Which statement is true about all of the numbers?

A. All of the numbers are even.

B. All of the numbers are odd.

C. All of the numbers are greater than or equal to 3.

D. All of the numbers are less than or equal to 3.

9. If you were counting by 4's, what would be the next number after 358?

A. 360

B. 362

C. 364

D. 368

10. The table below shows the number of people who attended the spring play each day.



How many more people attended the play on Saturday than on Thursday?

A. 17

B. 21

C. 38

D. 42

References

Accountability Report. (2010-2011). Gwinnett County Public Schools. Retrieved July 10, 2011, from

<http://www.gwinnett.k12.ga.us/gcps-mainweb01.nsf/FileAttachments/35BE36656D015CEB85256BCE004FEEB2/$file/HopkinsES.pdf>

Chevalier, R.D. (2007). *A manager’s guide to improving workplace performance.* New York, NY: American management Association.

History of G.H Hopkins Elementary School. (2009). Gwinnett County Public Schools. Retrieved July 10, 2011, from <http://www.gwinnett.k12.ga.us/gcps-mainweb01.nsf/9E7B2482C1CF6E85852575F50055A452/$file/HopkinsES.pdf>

Wood, K. (2002). Effects of SuccessMaker Math on Students with Learning Disabilities in Inclusive and Special Education Classrooms